SMARTGEN BAC06A-12V

SMARTGEN BAC06A-12V Generator Battery Charger User Manual

Model: BAC06A-12V

1. Introduction

The SMARTGEN BAC06A-12V is a switching battery charger designed for charging lead-acid starting batteries. It utilizes advanced switch power components to provide efficient and reliable charging. This charger is suitable for float charging applications and features a two-stage charging method to optimize battery life. This manual provides essential information for the safe and effective installation, operation, and maintenance of your BAC06A-12V charger.

The maximum charge current for the 12V charger is 6A. The unit is designed with a wide AC voltage input range of 90-280VAC at 50/60Hz.

2. Safety Instructions

- Read all instructions carefully before installation and operation.
- Ensure the input voltage matches the charger's specifications (90-280VAC).
- Do not expose the charger to rain, moisture, or excessive heat.
- Ensure proper ventilation around the charger to prevent overheating.
- Always disconnect AC power before making or breaking connections to the battery.
- This charger is designed for lead-acid batteries only. Do not use with other battery types.
- Avoid short circuits and reverse connections. The charger includes protection features, but caution is always advised.
- Only qualified personnel should perform installation and maintenance.

3. Features

- Designed with a switching power structure, offering a wide range of AC voltage input, small volume, light

weight, and high efficiency.

- Two-stage charging method (constant current followed by constant voltage) to prevent overcharging and extend battery life.
- Includes short circuit and reverse connection protection.
- Charging voltage and current can be adjusted via potentiometers on the unit.
- LED indicators for power and charging status.
- Horizontal type installation for BAC06A, designed for easy mounting.

4. Product Overview

The BAC06A-12V charger features clearly labeled input and output terminals, along with adjustment potentiometers and status indicators.

Figure 1: Front view of the SMARTGEN BAC06A-12V charger, showing the input/output terminals, fuse, and adjustment knobs.

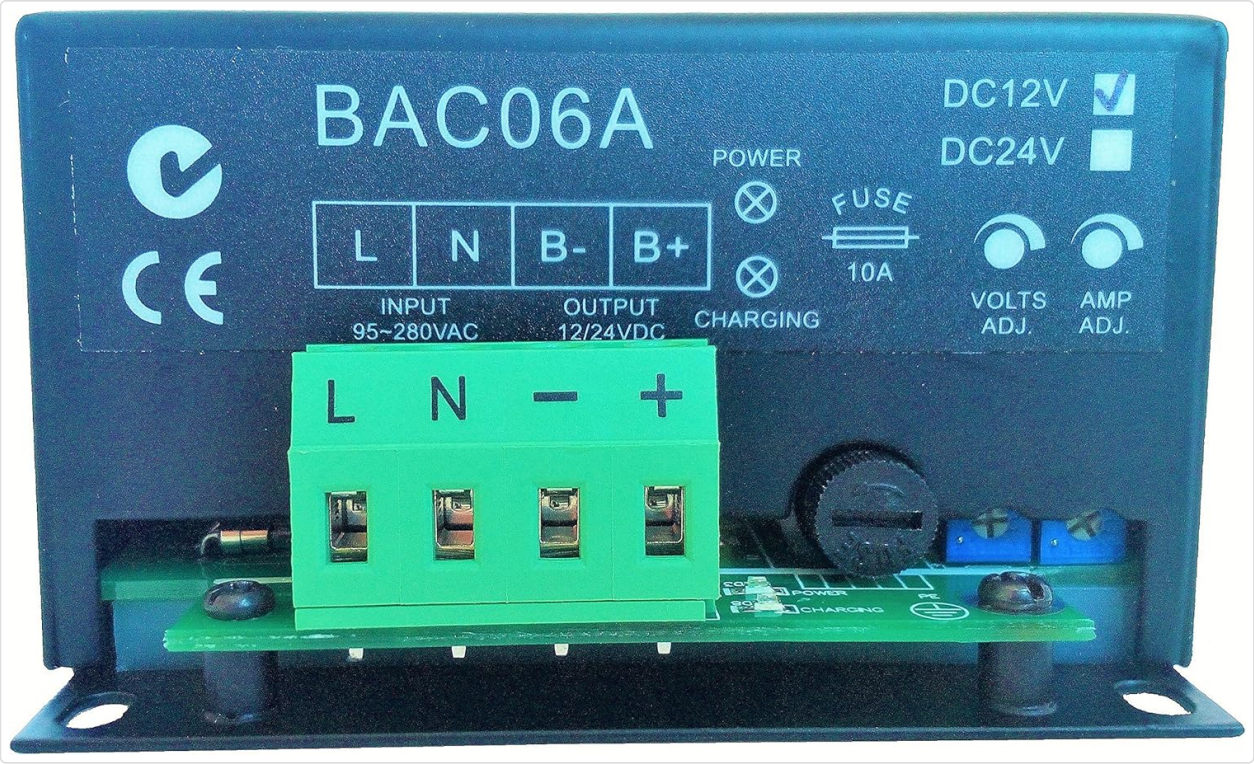

Figure 2: Close-up of the terminal block, showing 'L' and 'N' for AC input, and '-' and '+' for DC output. Also visible are the 'VOLTS ADJ.' and 'AMP ADJ.' potentiometers and LED indicators.

Figure 3: Side view of the charger, illustrating the heat sink fins for thermal management.

5. Setup and Installation

5.1 Mounting

The BAC06A-12V is designed for horizontal installation. Mount the charger securely using appropriate fasteners through the mounting holes on the base. Ensure there is adequate space around the unit for ventilation, especially near the heat sink fins.

5.2 Wiring Connections

Refer to Figure 2 for terminal identification. Ensure all connections are tight and secure.

- **AC Input (L, N):** Connect the AC power supply (90-280VAC, 50/60Hz) to the 'L' (Live) and 'N' (Neutral) terminals.
- **DC Output (-, +):** Connect the negative terminal of the 12V lead-acid battery to the '-' terminal on the charger. Connect the positive terminal of the 12V lead-acid battery to the '+' terminal on the charger. Observe polarity carefully to avoid damage.
- **Grounding:** Ensure the charger is properly grounded according to local electrical codes.

6. Operating Instructions

6.1 Initial Power-Up

After all connections are made and verified, apply AC power to the charger. The 'POWER' LED indicator should illuminate, indicating the unit is receiving power.

6.2 Charging Process

The charger employs a two-stage charging method:

1. **Constant Current Stage:** Initially, the charger delivers a constant current (up to 6A for 12V models) to rapidly charge the battery. During this stage, the 'CHARGING' LED indicator will be active.
2. **Constant Voltage (Float) Stage:** As the battery approaches full charge, the charger switches to a constant voltage mode, maintaining the battery at an optimal float voltage (typically 13.8V for 12V batteries) to prevent overcharging and keep it fully charged. The 'CHARGING' LED may change status or dim depending on the specific model's indicator logic.

6.3 Voltage and Current Adjustment

The charging voltage and current can be adjusted using the potentiometers labeled 'VOLTS ADJ.' and 'AMP ADJ.' (refer to Figure 2). Use a small screwdriver to carefully turn these potentiometers. Adjustments should only be made by experienced personnel and with a voltmeter/ammeter to ensure correct settings for your specific battery type and application. Incorrect settings can damage the battery.

7. Maintenance

- **Regular Inspection:** Periodically inspect the charger and its connections for any signs of damage, loose wiring, or corrosion.
- **Cleaning:** Keep the charger clean and free from dust and debris. Use a dry, soft cloth for cleaning. Do not use liquid cleaners.
- **Ventilation:** Ensure that the ventilation holes and heat sink fins are not obstructed to allow for proper cooling.
- **Fuse Replacement:** The charger is equipped with a 10A fuse. If the charger stops functioning, check the fuse. Replace it only with a fuse of the same type and rating (10A).

8. Troubleshooting

Problem	Possible Cause	Solution
Charger not powering on (POWER LED off)	No AC input power; Blown fuse; Internal fault.	Check AC power supply and connections. Verify fuse. If fuse is intact, contact support.
Battery not charging (CHARGING LED off/incorrect)	Incorrect battery connection (reverse polarity); Battery deeply discharged; Charger output voltage/current set too low; Internal fault.	Check battery connections for correct polarity. Allow time for deeply discharged batteries. Adjust voltage/current potentiometers if necessary (with caution). Contact support if problem persists.
Charger overheating	Poor ventilation; Overload.	Ensure adequate airflow around the charger. Reduce load if possible.
Output voltage unstable	Loose connections; Internal fault.	Check all wiring connections. Contact support.

9. Specifications

Detailed technical specifications for the BAC06A-12V charger are provided below.

SPECIFICATION

Category	Items		12V	24V
Input	Nominal AC Voltage		AC (100～250)V	
	Max. AC Voltage		AC (90～280)V	
	AC Frequency		50Hz/60Hz	
	Max. Input Current		2A	
	Efficiency		>82%	
Output	Charging Current		4A～6A,(Error±2%)	2A～3A,(Error±2%)
	Factory Charging Current		6A	3A
	Max. Power		85W	
	Min. Voltage		7.5V	
	No-load Voltage		13.8V, (Error ±1%)	27.6V, (Error ±1%)
	No-load power consumption		<3W	
Insulation	Insulation Resistance		Between input and output, input and shell both are: DC500V 1min R_L≥50MΩ	
	Insulation Voltage		Between input and output, input and shell both are: AC1500V 50Hz 1min Leakage current: I_L≤3.5mA。	
Working Conditions	Working Temperature		(-30～55)°C	
	Storage Temperature		(-40～85)°C	
	Working Humidity		10%RH～95%RH(No condensation)	
Profile	BAC06A	Weight	0.65kg	
		Dimension	143mm×96mm×55mm (Length*Width*Height)	
	BAC06V	Weight	0.69kg	
		Dimension	154.4mm×94.5mm×56mm (Length*Width*Height)	

Figure 4: Technical specifications table for BAC06A and BAC06V models.

Category	Item	12V Model (BAC06A)
Input	Nominal AC Voltage	AC (100~250)V
	Max. AC Voltage	AC (90~280)V
	AC Frequency	50Hz/60Hz
	Max. Input Current	2A
	Efficiency	>82%
	Charging Current	4A~6A (Error±2%)
Output	Factory Charging Current	6A
	Max. Power	85W
	Min. Voltage	7.5V
	No-load Voltage	13.8V (Error±1%)
	No-load power consumption	<3W
Insulation	Insulation Resistance	Between input and output, input and shell both are: DC500V 1min R_L≥50MΩ
	Insulation Voltage	Between input and output, input and shell both are: AC1500V 50Hz 1min
	Leakage current	I_L≤3.5mA
Working Conditions	Working Temperature	(-30~55)°C
	Storage Temperature	(-40~85)°C
	Working Humidity	10%RH~95%RH (No condensation)
	Weight	0.65kg
Profile	Dimension (L*W*H)	143mm × 96mm × 55mm

10. Case Dimensions

The following diagrams provide detailed dimensions of the BAC06A charger for installation planning.

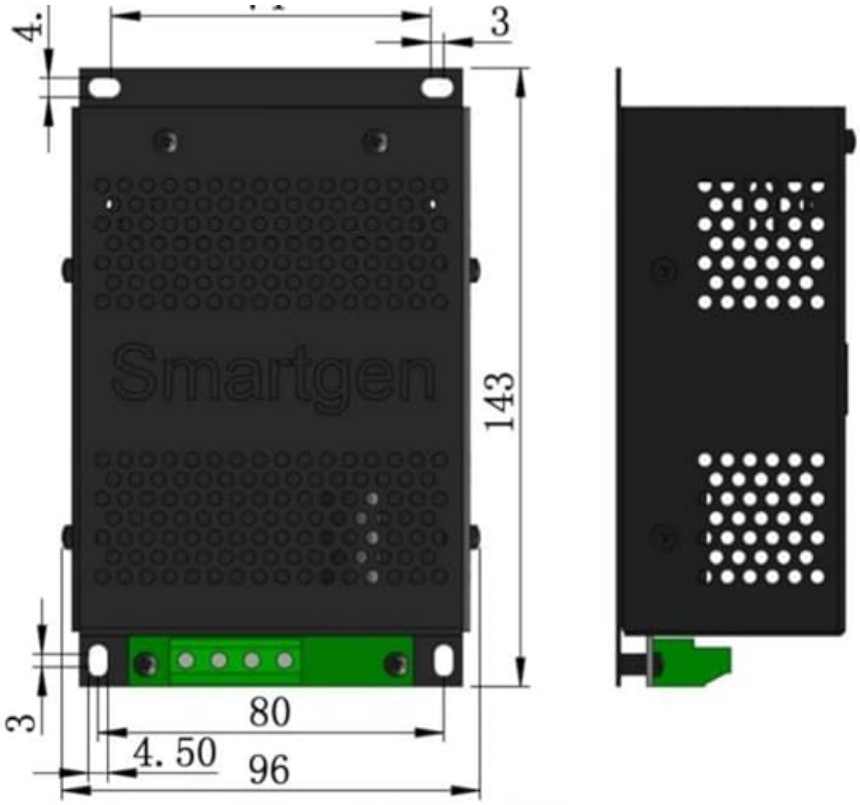

Chart 4. BAC06A Dimension

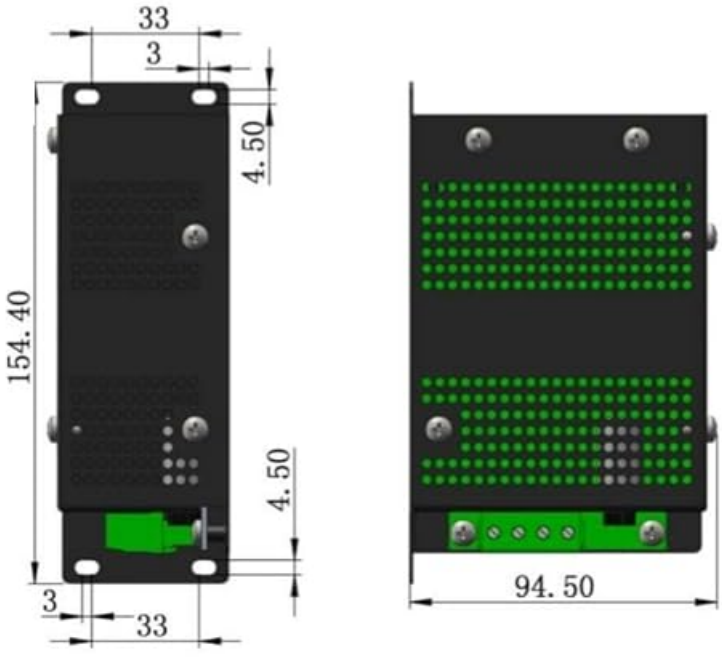

Chart 5. BAC06V Dimension

Figure 5: Detailed case dimensions for the BAC06A model, showing various views with measurements in millimeters.

11. Warranty and Support

For warranty information and technical support, please refer to the documentation provided with your purchase or contact your authorized SMARTGEN dealer. Keep your purchase receipt as proof of purchase for warranty claims.